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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,509	01/27/2004	Jung Tae Kang	6192.0146.D1	9956

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MACPHERSON KWOK CHEN & HEID LLP  
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SAN JOSE, CA 95110

EXAMINER
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NGUYEN, JIMMY H

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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06/13/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/764,509	<b>Applicant(s)</b> KANG ET AL.	
	<b>Examiner</b> Jimmy H. Nguyen	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-23,25-31 and 33-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-23,25-31 and 33-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/621,825.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is made in response to applicants' amendment filed on 4/23/2007.

Claims 18-23, 25-31 and 33-40 are considered as follows:

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 18-23, 25-31 and 33-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to independent claim 18, the disclosure, when filed, does not fairly convey to one of ordinary skill in the art that applicants had in their possession the claimed limitations, "a source PCB closely attached to a rear plane of the display panel" in lines 4-5 and "a driving circuit PCB closely attached to the rear plane of the display panel" in lines 8-9. The disclosure, specifically Fig. 13 and the corresponding specification, page 19, only teaches the source PCB 830 (i.e., the claimed first PCB and source PCB), the LC panel driving circuit 840 (i.e., the claimed second PCB and driving circuit PCB), and the ADC 870, all closely attached to **the rear plane of mold frame 850**, rather than to the rear plane of the display panel 810 as presently claimed. Accordingly, the original disclosure does not contain such description and details regarding to the above underlined limitations of claim 18, so as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to dependent claims 19-23, 25-31 and 33-36, since these claims directly or indirectly depend upon claim 18, these claims are therefore rejected for the same reason set forth in claim 18 above.

Additionally to claim 25, the disclosure, when filed, does not fairly convey to one of ordinary skill in the art that applicants had in their possession the claimed limitations, “wherein the display panel includes a plurality of source drivers and gate drivers, and wherein the source drivers and gate drivers are all disposed on the second PCB.” The disclosure, specifically Fig. 13 in view of Fig. 2 and the corresponding specification, only teaches a plurality of source drivers (data driving ICs 364) each disposed on a corresponding one of the data signal transmission films 363, which are not elements of the LC panel (355/810), and a plurality of gate drivers (gate driving ICs 362) each disposed on a corresponding one of the gate signal transmission films 361/820, which are not elements of the LC panel (355/810). Accordingly, the original disclosure does not contain such description and details regarding to the above underlined limitations of claim 25, so as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18-23 and 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baek et al. (US 6,977,640 B1, hereinafter Baek), and further in view of Takahashi et al. (US 5,889,572), hereinafter Takahashi.

As to claims above, Baek discloses a known display device (see Fig. 4) comprising a display panel (LC panel 10, see Fig. 4) displaying an image; a second PCB (a board including a timing control board 16 and FPC 21/13, 15; see Figs. 4-6) comprising a driving circuit PCB (16) closely attached to the rear plane of the display panel (see Fig. 6; col. 3, lines 54-58 and col. 4, lines 1-3) and having a first portion (21/13, 15) electrically connected to a source driver circuitry (a circuitry including source drivers 14) without using a separate connecting member (see Figs. 4-6). Further, as noting in Figs. 4 and 5, Baek further teaches the source driver circuitry (14) electrically coupled to the first portion (top portion) of the display panel (10) through column lines CL and provided on the lower substrate (10a) and the gate driver circuitry (the circuit including row drivers 12) electrically coupled to the second portion (left portion) of the display panel (10) through row lines GL and provided on the lower substrate (10a). Accordingly, Baek discloses all limitations of these claims except that Baek does not disclose the source driver circuitry (14) implemented by a separate first source PCB, which is attached to the display panel through a first tape carrier package (TCP), and a gate driver circuitry (12) implemented by a separate third gate PCB, which is attached to the display panel through a third tape carrier package (TCP), as presently claimed.

However, Takahashi discloses a related display device comprising a source driver circuitry implemented by a separate first source PCB (600), which is attached to a first (top) portion of the display panel (100) through a first tape carrier package (TCP), and a gate driver

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circuitry implemented by a separate third gate PCB (610), which is attached to a second (left) portion of the display panel through a third tape carrier package (TCP) (see Fig. 3, col. 2, lines 34-38). Takahashi further teaches the first and third TCPs including driving ICs (see Fig. 2, col. 2, lines 34-38). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement the source driver circuitry and the gate driver circuitry disclosed by Baek with the source PCB, gate PCB and TCPs, in view of the teaching in the Takahashi reference, because this would reduce the so-called frame area, as taught by Takahashi (see col. 1, lines 48-54).

6. Claims 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baek in view of Takahashi as applied to claim 18 above, and further in view of Furuhashi et al. (US 5,909,205), hereinafter Furuhashi.

As to claim 33, Baek further teaches the display device comprising a signal converting unit (a scanning receiver 42, see Fig. 4) electrically connected to the computer body (20) through a FPC (11), for receiving and decoding (converting) RGB video signal and timing control signals (see Figs. 4 and 5, col. 3, lines 12-15), and electrically connected to the second PCB (16) through a third connecting member (see Fig. 4), for providing the converted RGB video signal to the second PCB (16) (see col. 3, lines 12-19). Baek does not expressly teach the RGB being analog or digital and the signal converting unit converting analog RGB video signal into digital video signal, as presently claimed.

However, Furuhashi discloses a related display device comprising a signal converting unit (a unit comprising elements 104, 109, 110, 112 and 118; see Fig. 1) including an A/D converter (104) receiving analog video signal (102) externally provided by the computer, into a

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digital video signal and providing the converted signal to the display timing generating circuit (120) (the second PCB); see Fig. 1, col. 7, lines 1-22 and col. 8, lines 7-12. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide an A/D converter in the signal converting unit of Baek, in view of the teaching in the Furuhashi reference, because this would allow the display device of Baek capable of receiving an analog video signal from the computer, as known by a person of ordinary skill in the art.

As to claim 34, Fig. 6 of the Baek reference expressly shows the signal converting unit (42) and the second PCB (16, 21) closely attached to a rear plane of the mold frame (the panel housing 22A) (see col. 3, lines 54-58 and col. 4, lines 1-3). Furuhashi discloses the first connecting member as discussed in the rejection to claim 18 above. Accordingly, Baek in view of Takahashi and Furuhashi discloses the invention of claim 34.

As to claims 35 and 36, Baek discloses the third connecting member for connecting between the signal converting unit (42) and the second board (16) (see Fig. 4). Baek does not expressly teach the third connecting member comprising an upper socket and lower socket, as presently recited in claim 35, or a biting connector, as presently recited in claim 36. However, Official Notice is taken that both the concept and the advantages of utilizing a connecting member comprising an upper socket and lower socket, or a biting connector, as presently claimed, are well known and expected in the art. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to replace the third connecting member of Baek with the known connecting member, which comprises either an upper socket and lower socket or a biting connector, because it would allow the signal converting unit easily

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separated from the second PCB without any special tool, as known by a person of ordinary skill in the art.

7. Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baek in view of Takahashi, and further in view of Furuhashi.

As to claims 37 and 38, Baek discloses a known display device (see Fig. 4) comprising a display panel (LC panel 10, see Fig. 4) displaying an image; a second connecting member (FPC 21/13, 15, see Figs. 4-6) attached to a first portion of a second PCB (a timing control board 16, see Figs. 4-6) which is electrically connected to a source driver circuitry (a circuitry including source drivers 14) through the second connecting member (FPC 21/13, 15, see Figs. 4-6).

Further, as noting in Figs. 4 and 5, Baek further teaches the source driver circuitry (14) electrically coupled to the first portion (top portion) of the display panel (10) through column lines CL and provided on the lower substrate (10a) and the gate driver circuitry (the circuit including row drivers 12) electrically coupled to the second portion (left portion) of the display panel (10) through row lines GL and provided on the lower substrate (10a). Baek further teaches the display device comprising a signal converting unit (a scanning receiver 42, see Fig. 4) electrically connected to the computer body (20) through a FPC (11), for receiving and decoding (converting) RGB video signal and timing control signals (see Figs. 4 and 5, col. 3, lines 12-15), and electrically connected to the second PCB (16) through a third connecting member (for providing the converted RGB video signal to the second PCB (16) (see col. 3, lines 12-19). Furthermore, Baek teaches the signal converting unit (42) closely attached to a rear plane of the receiving container (the panel housing 22A) (see Fig. 6; col. 3, lines 54-58 and col. 4, lines 1-3). Accordingly, Baek discloses all limitations of claim 37 except that Baek does not disclose the



source driver circuitry (14) implemented by a separate first source PCB, which is attached to the display panel through a first tape carrier package (TCP), and a gate driver circuitry (12) implemented by a separate third gate PCB, which is attached to the display panel through a third tape carrier package (TCP), and the RGB being analog or digital and the signal converting unit converting analog RGB video signal into digital video signal, as presently claimed.

However, Takahashi discloses a related display device comprising a source driver circuitry implemented by a separate first source PCB (600), which is attached to a first (top) portion of the display panel (100) through a first tape carrier package (TCP), and a gate driver circuitry implemented by a separate third gate PCB (610), which is attached to a second (left) portion of the display panel through a third tape carrier package (TCP) (see Fig. 3, col. 2, lines 34-38). Takahashi further teaches the first and third TCPs including driving ICs (see Fig. 2, col. 2, lines 34-38). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement the source driver circuitry and the gate driver circuitry disclosed by Baek with the source PCB, gate PCB and TCPs, in view of the teaching in the Takahashi reference, because this would reduce the so-called frame area, as taught by Takahashi (see col. 1, lines 48-54).

However, the combination of Baek and Takahashi fails to teach the RGB being analog or digital and the signal converting unit converting analog RGB video signal into digital video signal, as presently claimed. Furuhashi discloses a related display device comprising a signal converting unit (a unit comprising elements 104, 109, 110, 112 and 118; see Fig. 1) including an A/D converter (104) receiving analog video signal (102) externally provided by the computer, into a digital video signal and providing the converted signal to the display timing generating

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circuit (120) (the second PCB); see Fig. 1, col. 7, lines 1-22 and col. 8, lines 7-12. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide an A/D converter in the signal converting unit of Baek, in view of the teaching in the Furuhashi reference, because this would allow the display device of Baek capable of receiving an analog video signal from the computer, as known by a person of ordinary skill in the art.

As to claims 39 and 40, Baek discloses the third connecting member for connecting between the signal converting unit (42) and the second board (16) (see Fig. 4). Baek does not expressly teach the third connecting member comprising an upper socket and lower socket, as presently recited in claim 35, or a biting connector, as presently recited in claim 36. However, Official Notice is taken that both the concept and the advantages of utilizing a connecting member comprising an upper socket and lower socket, or a biting connector, as presently claimed, are well known and expected in the art. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to replace the third connecting member of Baek with the known connecting member, which comprises either an upper socket and lower socket or a biting connector, because it would allow the signal converting unit easily separated from the second PCB without any special tool, as known by a person of ordinary skill in the art.

### ***Response to Arguments***

8. Applicants have amended independent claim 18 and argued that none of Baek, Takahashi, or Furuhashi, either singularly or in combination, fail to teach the limitations

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presently recited in last 8 lines of claim 18. In response, Examiner directs the Applicants to the detailed rejection above.

9. With respect to new claims 37-40, Applicants argued that Baek does not teach “a signal electrically connected to the second PCB to convert an externally provided analog video signal into a digital video signal and to provide the converted signal to the second PCB”; see the amendment, page 10. Note that as discussed in the rejection above, Furuhashi discloses such features. Applicants further argued that Baek fails to teach the feature, “the signal converting unit being closely attached to a rear plane of the receiving container”; see the amendment, page 10. Examiner disagrees because as discussed in the detailed rejection, Baek teaches the signal converting unit (42) closely attached to a rear plane of the receiving container (the panel housing 22A) (see Fig. 6; col. 3, lines 54-58 and col. 4, lines 1-3).

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is 571-272-7675.

The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHN  
June 4, 2007



Jimmy H. Nguyen  
Primary Examiner  
Technology Division: 2629